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DUAL BLADDER SPORTS HYDRATION SYSTEM

CLAIM OF PRIORITY

Priority is claimed based on U.S. Provisional Application Serial No. 60/340,931 filed Oct. 22, 2001 entitled "Dual Bladder Sports Hydration System" and invented by Randall B. Bailey.

BACKGROUND OF THE INVENTION

1. Summary of the Invention

A sports hydration system uses separate bladders or bladder portions containing different fluids, such as an electrolyte sports drink and water, or separate quantities of the same fluid. Each separate bladder or bladder portion feed to separate tube branches. Each branch communicates through a lever or arm operated valve to a single feed tube. In this manner the user can switch between the preferred beverage, feed both beverages, close both, or otherwise use the selection function for endurance and training advantage.

2. Description of Related Art

Sports hydration systems have developed primarily in the area of improved suspension, improved tube routing and improved terminals, outlets or 'bite' valves. While these are useful improvements they fail to address a primary limitation, namely that each arrangement is operably limited to the supply of a single fluid at a time.

A "Y" connector is used in U.S. Pat. No. 5,816,457 to join separate outlet tubes to a single bladder, the disclosure of this patent being incorporated by reference as if fully set forth herein. A dual function outlet is used in U.S. Pat. No. 4,526,298, changing outlet flow between a stream and a mist, from a single bladder, the disclosure of this patent being incorporated by reference as if fully set forth herein. Bite valves or outlet valves are also taught in U.S. Pat. Nos. 6,039,305 and 6,062,435, the disclosure of these patents being incorporated by reference as if fully set forth herein. Routing of the feed tube is taught in U.S. Pat. No. 6,283,344, the disclosure of this patent being incorporated by reference as if fully set forth herein.

The athlete or sportsperson, however, frequently desires alternative fluids during the course of an event or activity. For example, electrolyte sports drinks, such as Gatorade, can provide important performance enhancing elements, yet at other times, pure water is preferred, whether for taste or other functional reasons, or simple preference. Separate bladders can also be used to monitor or ration fluids, such as providing one bladder for a bicycle ride or run in one direction, with the exhaustion of that bladder signifying the need to return to a starting point and the second bladder providing hydration for the return.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is an elevational view of the components of the multiple bladder hydration system.

FIG. 2 is an elevational view of the components of the single bladder, multiple portion hydration system.

FIG. 3 is an elevational view of the valve.

FIG. 4 is a sectional view of a directional flow control valve.

FIG. 5 is a sectional view of a pinch valve controlling flow.

FIG. 6 is a perspective view of a preferred embodiment of a pinch valve.

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FIG. 7 is a plan view of a preferred pinch valve in a both sides open configuration.

FIG. 8 is a plan view of a preferred pinch valve with a right side closed and left side open configuration.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

A hydration system 10 has a plurality of bladders 12, 14. Each bladder 12, 14 flows through an outlet 20, 22 to a tube branch 24, 26. Tube branches 24, 26 interconnect at a valve 28, controlled between positions off 30, left 32 and right 34. Selecting positions off 30, left 32 and right 34 is accomplished by moving lever 36. In the preferred embodiment (FIG. 6-8) positions off 30, left 32 and right 34 are selected by the selective engagement or disengagement of cam arms 204, 206 as more fully described below. The terms "left" and "right" are relative, as the unit could be inverted, for example, while in use Valve 28 then permits fluid passage to feed tube 40 and thence to mouthpiece or bite valve 42.

In the alternative hydration system 110 has a single bladder envelope 112. bladder envelope 112 is subdivided by seam or baffle 114 into left and right bladder sections 116, 118. bladder sections 116, 118 flow through an outlet 120, 122 to a tube branch 124, 126. Tube branches 124, 126 interconnect at a valve 128, controlled between positions off 130, left 132 and right 134. Selecting positions off 130, left 132 and right 134 is accomplished by moving lever 136. Valve 128 then permits fluid passage to feed tube 140 and thence to mouthpiece or bite valve 142.

Bladders 12, 14 or 112 may be formed by a variety of methods that result in a durable, sanitary, economical, flexible reservoir that is chemically compatible with water or typical sports drinks. Vinyl sheet that is heat or ultrasonically welded is suitable. Similar materials can be used for outlets 20, 22, 120, 122, although a hybrid of a formed outlet in the bladder and a tubing connection 50, 52 or 150, 152 may be used, wherein the tubing connection may be either a durable, complex connection, such as a pivoting connection, a simple hose receiving barb type connection, or a permanent hose connection.

Tube branches 24, 26, 124, 126 can join either directly to valve 28, 128 or can be joined at a "Y" connector 158 to tube 40, 140. In the former arrangement, flow is directly through valve 28, 128, wherein valve 28, 128 functions in the manner of a directional flow control valve 160, having appropriate inlet and outlet fittings for the respective tubes. In the alternative, a ball valve could also be used, set up in the manner of a flow control valve to direct flow between off 30, 130, left 32, 132 and right 34, 134 positions.

As another alternative, a pinch valve type 162 can be used where valve 28, 128 indirectly controls flow by selectively pinching one or both of tube branches 24, 26, 124, 126. By pinching one branch and not the other, flow is controlled, but only the tube contacts the water or sports drink, facilitating easy cleaning. By pinching both branches, flow is completely cut off.

While alternative valve arrangements such as a pinch valve with a rotating cam or a dual flow valve may be used, as shown in FIG. 4 and FIG. 5, a pawl and rack locking pinch valve is preferred. This embodiment is shown in FIGS. 6-8. Valve 200 has a body 202 comprising left and right pinch cam arms 204, 206 extending from central rib 208. Rib 208 is spaced from lower rib 210. Rib 208 has an enlarged cylindrical portion 212 that defines a clip post receiving aperture 214. "Y" connector 158 fits in a slot 216 in between ribs 208, 210 and the legs 205 L and 205 R of conduit 158